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FAO PLANT PROTECTION BULLETIN

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FAO Plant Protection Bulletin

Vol. III, No. 10 — A Publication of the — July 1955

World Reporting Service on Plant Diseases and Pests

Control of Olive Fly with Dieldrin and Methoxychlor in Israel [1]

Z. Avidor, I. Mohrer

Agricultural Research Station, Rehovot

and I. Harpaz

Faculty of Agriculture, Hebrew University, Rehovot

Previous experiments in Israel have demonstrated that the olive fly (*Dacus oleae*) can be effectively controlled by cover-spray applications with dieldrin or methoxychlor. Experiments comparing reduced concentrations of these two insecticides were conducted during the summer of 1954 with a view to determining their minimum concentrations necessary for effective control.

Material and Methods

These experiments were carried out in the olive grove selected for previous experiments, located on the coastal plain 10 kilometers south-east of Rehovot. The olive variety Merkhaviah grown in this grove, resembling closely the European varieties used in Israel for green pickling, is very susceptible to olive fly attacks. Infestation commences in the middle of June and the crop must be protected till the end of August when the olives are harvested green for pickling. The first treatment is applied in the middle of June when the oviposition punctures of the first generation adults become evident. The second treatment is applied in July against the adults of the second generation as determined by laboratory breeding and sexual maturity of female flies in the field. In 1954 the exact dates of the two treatments were 15 June and 13 July.

The concentrations of insecticides used varied from 0.1 to 0.5 percent of active ingredients. The formulations were prepared from commercial wettable powders of 50 percent methoxychlor and 25 percent dieldrin.

Table 1. – *Results of methoxychlor and dieldrin treatments for the control of olive fly, 1952–54*

Treatment		Percent fruits infested		
		1952	1953	1954
Methoxychlor				
	0.5	4.0	8.5	5.4
	0.2		7.1	4.3
	0.1			7.8
Dieldrin				
	0.5	1.4	0.2	1.5
	0.2		5.8	2.3
	0.1			4.1
Check		22.4	38.1	13.5

[1] Agricultural Research Station, Rehovot, 1954 Series, No. 84.

Each tree was sprayed with about 15 liters of the liquid, applied by a power sprayer at 200 lb. pressure. The wetting agent "Shell Estol" was used at the rate of 40 cc. per 100 liters of suspension.

The experiments were set in randomized blocks. Due to the relatively small number of Merkhaviah trees bearing an economic crop, and the large number of treatments considered, only three replications were used. In each replication the treatments were randomized on plots of three trees. Because of the proximity of the plots, the treatments were made in the early morning before the wind rose, great care being taken to prevent drift from one plot to others. At picking time, a large quantity of olive fruits was picked from the periphery of each tree at man's height and was thoroughly mixed in a box. Then four samples of 100 olives were taken from each box for the determination of the percentage of infestation. Thus, for a given treatment, the mean percentage of infestation is based on 36 samples of 100 fruits each.

Experimental Results

The results of these experiments, together with those of the two previous years, are summarized in Table 1 and the analysis of variance of the 1954 experiments is shown in Table 2. From these data, it is clear that in spite of a generally low infestation in 1954, both methoxychlor and dieldrin afforded effective protection. In accordance with the consistent trend observed in previous years, dieldrin again performed better than methoxychlor. As regards concentrations, the 1954 experiments did not reveal any significant differences between the three concentrations used within either insecticide. It should be pointed out, however, that due to the very hot weather which prevailed in Israel during July–August 1954 the activity of the olive fly was much suppressed, resulting in a low infestation even in the unsprayed plots and consequently somewhat affecting the experimental results. In 1952 and 1953 infestation in the same olive variety at picking time was much higher.

TABLE 2. – *Analysis of variance of the results of the 1954 experiments*

Source of variation	Sum of squares	Degrees of freedom	Mean square
Sampling Units	8.6260	189	0.0456
Sampling Areas	10.7463	42	0.2559
Blocks	1.1388	2	0.5694
Treatments	21.4483	6	3.5747 [a]
Treatments vs. Check	9.6976	1	9.6976 [b]
Methoxychlor vs. Dieldrin	7.3004	1	7.3004 [a]
Within Methoxychlor	1.2408	2	0.6204
Within Dieldrin	3.2095	2	1.6047
Error	11.0270	12	0.9189
Total	52.9864	251	

[a] 5% level of significance.
[b] 1% level of significance.

Residues of Dieldrin

Since dieldrin is more toxic to warm-blooded animals than methoxychlor, samples of olives were taken at picking time from the dieldrin-sprayed plots and the check plots, and were sent for residue analysis to the Thornton Research Centre of the Shell Company in England, which reported as follows:

Both surface extracts obtained by extraction of the whole olives, and total extracts obtained by extraction of the crushed olives, were analysed by means of the infra-red spectrophotometric methods. Recrystallized dieldrin was used as a standard for comparison. The infra-red spectra of the above extracts have shown no conclusive evidence of the presence of dieldrin. Since the limit of sensitivity of the method is 0.5 p.p.m., it must be concluded that if dieldrin was present, its amount did not exceed 0.5 p. p. m. in any of the samples examined.

Conclusions

The results obtained in 1954 show conclusively that effective control of the olive fly may be attained under conditions of the experiments by two cover-sprays with 0.5 percent active ingredient of methoxychlor or dieldrin. As in previous years, dieldrin gave better results than methoxychlor. No final recommendations can yet be made with regard to the minimum effective concentrations, but 0.2 percent active ingredient of dieldrin seems to give equally satisfactory results as 0.5 percent.

It is appreciated, however, that in areas where the olives need protection for longer periods the number of treatments would have to be increased accordingly. Another aspect which should be further investigated is the suitability or efficiency of dieldrin in areas of late harvest where protection is still required after the commencement of the autumn rains.

Plant Disease Situation in the United States[1]

PAUL R. MILLER

Plant Disease Epidemics and Identification Section, Agricultural Research Service
United States Department of Agriculture

Hosts of Feathery Mottle Virus of Sweet Potato

SWEET potato (*Ipomoea batatas*) is among the most important horticultural crops grown in the southern United States, and the success of the industry depends largely upon rigid regulations governing the production and sale of certified "seed", i. e. roots and young sprouts. Millions of young sprouts produced from certified seed are needed each year to plant the commercial crop. To maintain this supply, some states have established foundation-seed farms, to produce small quantities of selected, high-quality roots. The output from these seed farms assures certified-seed growers of a continual source of sweet potato seed relatively free from fungal and virus diseases.

Virus or virus-like diseases of the sweet potato have been reported in the United States since 1920 but have not constituted a serious problem until recently. Among them is feathery mottle, which is mechanically transmissible and can also be spread by *Myzus persicae* (Sulz).

Since field spread of the feathery mottle virus was shown to be possible, it was important to determine the extent to which cultivated members and weeds of the family Convolvulaceae might harbor the virus. Many of these plants are widespread in the sweet-potato-growing areas, and, if susceptible, could present a serious obstacle to production and maintenance of virus-free seed stocks.

Under field conditions, particularly during bright, hot summer days, distinctive symptoms of feathery mottle in the sweet potato varieties Porto Rico Unit 1, Georgia Bunch, and Texas Bunch are partially masked. The small chlorotic dots and subsequent vein-feathering symptoms on the young leaves fade rapidly, giving the entire plant a slightly chlorotic appearance. Only in the shaded portions of the interior of infected plants can definite symptoms be distinguished.

In root-transmission studies a period of 39 to 45 days was required for plants to show symptoms when grown from infected roots. This long incubation period makes it difficult to rogue diseased plants and also makes the sweet potato an unsatisfactory plant for the virus-transmission studies. A true-seed host adapted to greenhouse culture, which would react distinctively to infection in a relatively short time, is needed for indexing foundation and certified-seed stocks, detection of the virus in suspected plants, and study of the virus properties.

A total of 33 different varieties and species were tested at the Louisiana Agricultural Experiment Station including genera of the Solanaceae, Leguminosae, and Cucurbitaceae, as well as Convolvulaceae. Infection resulted only in the four genera of Convolvulaceae, including common moonflower (*Calonyction aculeatum*), sweet potato (varieties Heart O'Gold, Georgia Bunch, Porto Rico 2-1, Porto Rico Unit 1, Ranger, and Texas Bunch), common morning-glory (*Ipomoea purpurea*, variety Crimson Rambler), *Merremia sibirica* and *Quamoclit lobata*. Other convolvulaceous plants, in which infection failed to develop, included *Ipomoea cairica*, *I. nil*, *I. sinuata*, *I. tricolor*, several horticultural varieties of *Ipomoea* spp., *Quamoclit coccinea*, and *Q. sloteri*. The presence or absence of the virus in inoculated plants was verified by subinoculations to sweet potato and Crimson Rambler morning-glory plants.

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[1] This report is based upon material submitted by Collaborators of the Plant Disease Epidemics and Identification Section, Agricultural Research Service, United States Department of Agriculture.

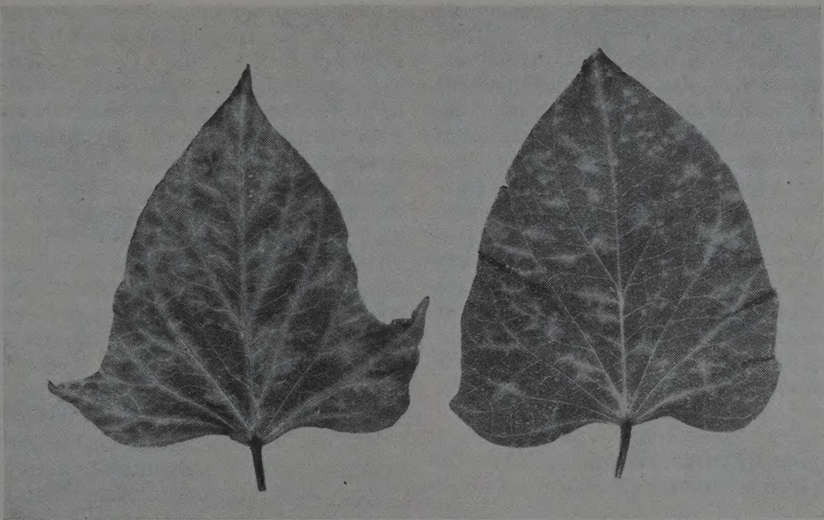

Figure 1. Leaves of Porto Rico Unit 1 sweet potato showing symptoms of the feathery mottle virus.

The six varieties of sweet potato were readily infected and showed typical feathery mottle symptoms (Figure 1). Symptoms expressed by *Calonyction aculeatum* were similar to those shown by sweet potatoes. Under greenhouse conditions vein feathering failed to develop as rapidly in these plants as in sweet potato plants and the progress of the virus into the developing leaves was much slower. Infected plants were severely stunted, but necrosis of stems and leaves was not observed. *Merremia sibirica*, when infected, developed a chlorotic band along the leaf veins. As the leaves matured, they became slightly chlorotic and the plants were severely dwarfed. Symptoms produced on infected plants of Crimson Rambler morning-glory and on *Quamoclit lobata* were very similar. On the inoculated leaves, typical small chlorotic spots characteristic of infection by the feathery mottle virus developed with slight vein clearing and vein necrosis of many small veinlets. Necrosis extended into the leaf lamina for a short distance, and, as the leaves aged, portions of the necrotic areas dropped out giving the leaves a tattered and slightly chlorotic appearance. The more severely affected leaves eventually abscised. Systemic symptoms were similar to those produced on the parts initially inoculated. As the infected plants grew, the young leaves, one-third to one-half grown, developed a slight mottle and vein clearing and veinal necrosis followed closely. Infected plants of both species failed to show severe stunting.

Virus-infected plants of Crimson Rambler blossomed and set seed freely. Seed from four infected plants, produced after the infection, were harvested and planted to determine whether the virus was seed-transmitted. Duplicate plantings were made with 200 seeds from each infected plant. The seedlings were observed for a 30-day period and all plants remained healthy.

The varieties and species tested are a very small part of the total number in the family Convolvulaceae, many of which are perennials and occur as weeds in cultivated fields and adjacent lands. Since some of the wild and cultivated species have been shown to be susceptible to infection by the feathery mottle virus, it may be assumed that certain others may also be susceptible. Those susceptible plants could prove to be important sources of spread in sweet-potato-growing areas if vectors are present. Once

a perennial host became infected it could act as a permanent reservoir of the virus. Consequently the role of weed hosts in the dissemination of the virus has an important bearing on the control of the disease in commercial fields as well as in certified and foundation-seed plots.

Young sweet potato plants are ordinarily removed from the plant bed and transplanted to the field at a stage too early for virus infection to be detected; also, as already said, under summer conditions, symptoms of infection are not easily recognized. The distinctive reaction of Crimson Rambler morning-glory to infection by the feathery mottle virus makes it a good indicator plant for the virus.

Occurrence of Mite Vector of Wheat Streak Mosaic in Air

During investigations in Kansas, in 1954, on aerial transport of stem and leaf rust spores, microscopic mites were occasionally observed. They were obtained in June and July on slides that had been coated with silicone grease (DC-4) and exposed for 24 hours daily and 48 hours over week-ends. The slides were exposed at an angle of 45° in a holder mounted on a frame with a wind-vane which kept the slides facing the wind. The holder was located about 150 feet above ground level on the campus of Kansas State College, at Manhattan in Riley County, Kansas, on a slight eminence overlooking the Kaw Valley. The nearest wheat fields to the south were 1 ½ to 2 miles away. Wind was mostly from the south on days when mites were caught, except on the last three days, 7-9 July, when it was from the northwest, east, and southeast, respectively.

Twenty mites were found on nine slides. Four specimens on three slides, exposed 11 June, 26-27 June and 3-5 July, were determined to be *Aceria tulipae*, the vector of the wheat streak mosaic virus. Another species of *Aceria* was present on a fourth slide. Other mites caught belonged to several other genera.

Wheat was still green when the first mite was recorded. Combining began in the Manhattan area 21 June and by 1 July wheat harvest had been largely completed.

Kansas experienced a widespread wheat streak mosaic epidemic in 1954. Although Riley County was not in the heavily infected area the disease was severe in scattered fields. This discovery of the occurrence of the vector in the air so high above ground and so far from wheat fields is obviously important as suggesting a means for long-distance spread of the virus.

Figure 2. Watermelon fruit rot produced in the field by Phytophthora parasitica.

Watermelon Fruit Rot in Texas

In June 1954, a fruit rot of watermelon, Black Diamond variety, was observed in an irrigated field in the Lower Rio Grande Valley of Texas (Figure 2). Growers stated that the rot had occurred in the past, but it was most serious in 1954 when a 15 percent loss was sustained in some fields.

Sporangia of a *Phytophthora* were found on the surface of the lesions. In cultures from the advancing margin of diseased tissues of many fruits, the *Phytophthora* appeared consistently on all the media used. All isolates were similar in morphological and cultural characteristics on any given medium. All artificially inoculated melons became diseased. The fungus was identified as *Phytophthora parasitica* Dast.

Watermelon fruit rots, in the field, have been reported to be caused by *Phytophthora cactorum* (Leb. & Cohn) Schroet. in Arizona, by *P. capsici* Leonian identified on Winter Queen melons grown in Colorado, and by *P. citrophthora* (Sm. & Sm.) Leonian in California. *P. Parasitica* and other species of *Phytophthora* have also caused watermelon fruit rot by artificial inoculation.

Clover Root Borer as a Vector of Anthracnoses of Red Clover

The close association of the clover root borer, *Hylastinus obscurus*, with diseased plants of red clover (*Trifolium pratense*) suggested that this insect might serve as an agent for disseminating and introducing disease-producing organisms into healthy plants.

In experiments conducted at Beltsville, Maryland, to test this relationship, roots of red clover heavily infested with the root borer obtained from Ohio in the spring of 1947 were placed in a Berlese funnel to force adults to emerge as desired for use in the tests. Six pathogenic cultures of the southern anthracnose fungus, *Colletotrichum trifolii* Bain & Essary, were grown on potato-dextrose agar in petri plates until sporulation was abundant. In early May several borers were placed in each plate culture and allowed to crawl over the sporulating fungus growth for 10 minutes, when appendages from selected root borers examined microscopically were heavily laden with conidia. Root borers from each culture were then transferred to soil in pots containing single red clover plants that had been grown in steam-sterilized soil in a greenhouse. Root borers that had not been in contact with the cultures were transferred to three check plants. The plants were enclosed in cellophane cages with wire-cloth ventilating windows in a greenhouse or insectary, depending on which location more nearly approximated 60° to 70° F. After about 3 weeks typical anthracnose symptoms were evident on all but one of the plants infested with the fungus-carrying borers. None of the check plants became infected. *Colletotrichum trifolii* was isolated from lesions on foliar parts of all infected plants.

A second test started one week later produced only negative results, but the high temperature and low humidity during the period of this test were unfavorable for the development of southern anthracnose.

In 1952 roots of red clover heavily infested with root borer were again obtained from Ohio. The tests were repeated in April with cultures of the northern anthracnose fungus, *Kabatiella caulivora* (Kirchn.) Karak., besides four cultures of the southern anthracnose fungus. Of 24 plants infested with the fungus-carrying root borers, 14 showed evidence of entrance by the insect when examined about one month later. Eight plants were entered by borers carrying *Kabatiella caulivora* but only two plants developed symptoms of northern anthracnose. Six plants were entered by root borers carrying *Colletotrichum trifolii*, but no plants developed positive symptoms of southern anthracnose. None of the check plants became infected. The low and somewhat inconsistent infection may be accounted for by the low humidity in the greenhouse during the period of the tests.

These preliminary results indicate that the clover root borer can act as a vector of *Colletotrichum trifolii* and *Kabatiella caulivora*. Whether this fact possesses practical significance under field conditions needs to be determined.

Incidence of Two Forest Insects in Germany

E. Schimitschek

Institute of Forest Zoology, University of Göttingen, Hannoversch–Münden

Larch Thrips

Since its first appearance in Czechoslovakia in 1926, the die-back disease of larch, which was determined in 1941 by Kratochvil and Farsky [1] to be caused by the toxin injected in the process of feeding by the larch thrips (*Taeniothrips laricivorus* Krat. & Farsky), has spread throughout extensive areas in Central Europe. Ten- to twenty-year-old stands of the European larch (*Larix decidua*) grown beyond its natural range were especially damaged by attacks of this thrips in large masses, particularly in areas under the influence of oceanic climate.

The infestation takes place in spring as new shoots sprout. The adults prefer to live on new top shoots and the degree of damage caused depends much on climatic conditions. Especially when the second generation of the insect coincides with a long dry season, as frequently happens in July,

[1] Kratochvil, J. and O. Farsky. "The larch thrips, *Taeniothrips laricivorus*, sp. n., as the cause of the dying of larch shoots in Czechoslovakia." (translated title). *Lesnická Práce.* 20: 233–272. 1941.

Figure 1. Malformation of larch trees caused by infestation of *Taeniothrips laricivorus*. *Left.* Bushy growth of a tree top as a result of the development of numerous secondary shoots. *Right.* Die-back of a tree top and its replacement by the development of new shoots.

the infested top shoots often die. This loss of height increment renders the young larch trees unable to compete with other tree species and the tree tops usually become deformed through the growth of secondary shoots (Figure 1).

Japanese larch (*Larix kaempferi*) is also infested by the larch thrips but proves to be more resistant. The European larch also shows varying degrees of tolerance, insofar as the trees with slender growth and thin branches regenerate more readily than the type with coarse branches.

Successful control of the larch thrips has been obtained by the application of the systemic insecticide Metasystox, a Bayer product, which also controls the larch casebearer (*Coleophora laricella* Hbn.).

Red Tail Moth on Beech

Local outbreaks of the red tail moth (*Dasychira pudibunda* L.), which commenced in 1951 in several beech (*Fagus*) forests in Germany, came to a sudden end in 1954. As in earlier cases, the outbreaks were suppressed by an epidemic of the infectious polyhedral disease.

Generally, the infestation of the red tail moth does not inflict any loss of economic importance in beech trees, because the defoliation caused by the feeding of its larvae occurs only late in the season. The increment loss thus resulting is usually of no significance and seldom exceeds the normal annual fluctuation. Only in the natural regenerated beech forests, very young trees may suffer from occasional limited damage.

Localized attacks of the red tail moth are not unusual in different parts of Europe and exceptionally heavy outbreaks to the extent of destroying beech stands of considerable size have been reported in nearly every decade. Centers of the infestation in Central Europe are in the Palatinate Forest, Spessart, Upper Hesse, Reinhards Forest, Solling, Thuringian Forest and on the Rügen Island, where this pest was firmly established in the last century.

Thielaviopsis Pod Rot of Cacao in Ecuador

RUSSELL DESROSIERS
Servicio Cooperativo Interamericano de Agricultura, Quito, Ecuador

A POD disease of cacao caused by a species of *Thielaviopsis*, probably *T. paradoxa*, was first observed at the Tropical Experiment Station in Ecuador in June 1950. Since then the disease has been found again on few occasions.

A pod infected with this disease is characterized by the development of a large brown lesion which is soft to the touch and easily crushed. The fragility of the infected tissues is unusual and diagnostically useful as no other pod disease of cacao produces a lesion of the same consistency. The tissues of the wall appear to be softened, except the sclerenchyma layer, so that the pod wall will crush like an eggshell under pressure of the fingers. Evidence of a wound, frequently such as would be made by the pecking of a bird, is found at some point near the center of the brown lesion. The lesion will rapidly spread to cover the whole surface of the pod and a complete destruction of the pod and its contents occurs. Making a fresh cut through such an infected pod before it is invaded by secondary organisms will reveal the presence of a grayish fungus growth in the interior and the diseased tissues will produce an odor reminiscent of pineapple or apple. Under moist conditions tufts of white mycelium and conidiophores will appear on the surface.

A species of *Thielaviopsis* in constant association with the disease was found capable of producing the disease by inoculating mature or nearly mature pods with either mycelium or spore suspension from pure culture (Figure 1). It was not possible to induce infection on pods which were in earlier stages of development or unwounded or which had been only superficially wounded by scratching with a scalpel. Shallow gouging of the surface of the pod was found necessary to enable the fungus to become established. After inoculation, the entire pod became involved within five to seven days with weakening of the walls and production of a pronounced odor. The fungus was easily reisolated from such inoculated pods.

When pods were inoculated internally

Figure 1. Cacao pods four days after inoculation with a pure culture of *Thielaviopsis*. Infection developed rapidly where pods were gouged with a scalpel but no infection resulted where pods received only small X-shaped scratches.

by splitting the pod and placing a bit of the pure culture of the fungus inside, about one half of the external surface of the pods became brown by the fourth day in the moist chamber, with weakening of the walls and development of a pronounced odor. On the seventh day after inoculation the pods were entirely brown and were covered with a white fungus growth which proved to consist almost entirely of tufts of microconidiophores and microconidia. The insides of the pods were filled with fungus mycelium, macroconidiophores and an abundace of dark macroconidia. It was thus possible to separate easily the two kinds of conidia. Further inoculations proved that the two kinds of conidia, when inoculated separately, were equally effective in producing infections.

Thielaviopsis pod rot is not a disease of economic importance on cacao. The causal fungus is a wound parasite attacking only pods which are mature or nearly mature. Once it has gained entry to the pod, however, it spreads very rapidly and is destructive.

Outbreaks and New Records

Canada

C. G. MacNay

Entomology Division Department
of Agriculture, Ottawa

The Widespread Outbreak of Armyworm in 1954

The armyworm, *Pseudaletia unipuncta* Haw., occurred during June and July 1954 in an outbreak that affected every province from Saskatchewan to Newfoundland. The occurrence was the third widespread outbreak since the turn of the century. In Saskatchewan significant damage was caused to brome grass, rye, spring wheat, barley and native grasses. In Manitoba, a moderate outbreak affected pasture and grain crops, chiefly in the Red River Valley and an area along the west side of Lake Winnipeg; Franklin gulls were a major control factor in the latter area. In Ontario, the attack affected all areas where cereal crops are grown except the counties bordering on Lake Erie. Oats were most extensively damaged; barley, wheat, timothy, maize, rye, grasses and clover cover crops were affected to a lesser degree. In eastern counties of the province the outbreak was the most severe in 40 years; damage to oats ran as high as 75 percent or more and probably averaged about 20 percent. Severe infestations and extensive crop damage were reported from many points throughout the agricultural area of Quebec. The insect was recorded in every county of New Brunswick, damage being most severe in Carleton and Victoria counties, where grain is grown extensively. In Nova Scotia, it was the outstanding pest of the season and more widely distributed than in 1953. Severe outbreaks and damage to grain, especially oats, were reported from the eastern part of Prince Edward Island, and heavy infestations in several areas of Newfoundland caused extensive damage to clover pastures.

United States

Plant Pest Control Branch
Agricultural Research Service
United States Department of Agriculture

Further Incidence of Yellow Clover Aphid and Brown Cotton Leafworm

The yellow clover aphid, *Myzocallis trifolii* (Monell), which caused extensive damage to alfalfa in the United States for the first time in 1954, has continued to spread and cause serious injury to this crop. In addition to the States of California, Arizona, New Mexico and Nevada, where outbreaks occurred last year, Texas and Oklahoma have reported heavy widespread infestations, and Kansas has had near-destructive populations in some counties. This aphid has been collected widely in this country; however, until 1954 it was regarded only as a minor pest of clovers.

Another insect causing concern for the first time in 1954 was the brown cotton leafworm, *Acontia dacia* (Druce). Again this year this pest has appeared in cotton fields of central and eastern Texas, where it first attracted attention, and in some areas of Louisiana. The 1955 infestations in Texas have necessitated control measures in fields of young cotton in several counties, while populations in Louisiana have been responsible for local damage. As far as known, damage by this pest to cotton in the United States has been limited to these two States.

Plant Quarantine Announcements

Belgium

Royal Decree of 28 April 1955, published in the *Moniteur Belge* on 13 May 1955, modifies the Royal Decree of 12 March 1952 relating to measures for prevention of the introduction and spread of San José scale (*Aspidiotus perniciosus*).

Under this new Decree, the phytosanitary certificate required to accompany each imported consignment of living woody plants and parts thereof (including fruit but excluding seed and subterranean parts) must indicate the names of consignor and consignee and the place of cultivation, and, in the case of plants, their botanical name and quantity. The certificate must also specify, in French or Dutch, that the consignment is free from the San José scale.

Ministerial Decree of 28 April 1955, also published in the *Moniteur Belge* on 13 May 1955, modifies the Ministerial Decree of 13 March 1952 concerning San José scale. In view of the modification introduced by the new Royal Decree mentioned above, the importer's declaration which was required to be attached to the phytosanitary certificate for each consignment of living woody plants and parts thereof is not now required.

Federal Republic of Germany

Ordinance of 20 December 1954, published in the *Ministerialblatt* No. 1, 3 January 1955, provides measures for prevention of the introduction of potato root eelworm (*Heterodera rostochiensis*). The importation of potatoes infested or suspected of being infested by this eelworm is prohibited.

The importation of potatoes free from infestation is permitted only if the consignment is accompanied by an official certificate in German and in the language of the country of origin, issued within 20 days of shipment, stating that the consignment was inspected and found to be free from potato root eelworm and that the potatoes originated in a locality free from infestation. The consignment is subject to inspection at the customs at the point of entry. Exemptions from this restriction are provided for in the case of importation of potatoes grown in the frontier districts beyond the border and for the importation of seed potatoes to be used in lands within the border but cultivated by residents outside the border. This restriction is also not applicable to potatoes used exclusively for consumption on ships sailing on inland waterways. The transit of potatoes under customs supervision is permitted.

The same Ordinance came into force for the Western Sectors of Berlin on 25 December 1954.

Yugoslavia

An Order of the Federal Executive Council of 28 December 1954, published in the *Sluzbeni List* No. 54 on the same date, enumerates plant diseases and pests listed below, which are considered dangerous. The importation into Yugoslavia of any plants infected or infested thereby is prohibited.

Anuraphis persicae-niger
Aspidiotus perniciosus
Bacterium (*Pseudomonas*) *savastanoi*
B. (*Agrobacterium*) *tumefaciens*
Beta virus 4 (beet yellows)
Calandra oryzae
Ceratitis capitata
Cuscuta spp.
Cydia molesta
Dothichiza populea
Endothia parasitica
Hyphantria cunea
Leptinotarsa decemlineata
Lophodermium pinastri
Orobanche spp.
Pectinophora gossypiella
Phthorimaea operculella
Pissodes notatus
Prunus virus 7 (sarka disease of plum)
Synchytrium endobioticum
Urocystis cepulae
Potato viruses
Spongospora subterranea
Acanthoscelides mimosae
Adelopus gäumannii
Aleurocanthus woglumi
Anastrepha ludens
Annulus cerasae (ring spot of sour cherry)
Anthonomus grandis
Aonidiella aurantii
Aphelenchoides fragariae
Aplanobacter (*Corynebacterium*) *michiganense*
Aserica japonica
Aspidiotus destructor
Bacillus (*Erwinia*) *amylovorus*
Bacterium stewarti
Bruchus analis
B. ornatus
Callosobruchus quadrimaculatus
Ceroplastes sinensis
Cytospora chrysosperma

Chalara quercina
Dacus cucurbitae
D. dorsalis
Dialeurodes citri
Diplodia zea
Eriophyes gossypii
Erwinia nimipressuralis
Fusarium conglutinans
Gloeosporium limetticolum
Guignardia bidwellii
Heterodera radicicola
H. rostochiensis
H. schachtii
Hypoxylon pruinatum
Icerya purchasi
Lepidosaphes beckii
L. gloverii
Ligyrus gibbosus
Lyctis planicollis
Parlatoria ziziphi
Phloem necrosis (elm)
Phlyctaena linicola
Phoma allantella
P. citricarpa
P. lingam
Phylloxera vastatrix
Phyllocoptes oleivorus
Phytophthora cambivora
Popillia japonica
Prontaspis citri
Prunus virus 1 (peach yellows)
Prunus virus 1A (little peach)
Prunus virus 2 (peach rosette)
Prunus virus 3 (phony peach)
Prunus virus 5 (peach mosaic)
Pseudococcus citri
P. gahani
Psorois (citrus)
Rhabdocline pseudotsugae
Rhagoletis cerasi
R. pomonella
Saissetia nigra
S. oleae
Scirtothrips citri
Sclerotium rolfsii
Sphaeropsis tumefaciens
Tristeza, quick decline (citrus)
Xanthomonas citri
X. malvacearum
Viruses of forest trees

News and Notes

Guatemala Ratifies the International Plant Protection Convention

The Government of Guatemala, whose representative signed the International Plant Protection Convention on 23 April 1952, deposited the instrument of ratification with the Director-General of FAO on 25 May 1955. The nunber of countries contracting to the Convention, including both signatory and adhering members, is thus, at the time of writing, twenty-nine, namely: Argentina, Australia, Austria, Belgium, Cambodia, Canada, Ceylon, Chile, Denmark, Dominican Republic, Egypt, El Salvador, Greece, Guatemala, India, Iraq, Ireland, Japan, Korea, Laos, Luxembourg, Netherlands, New Zealand, Pakistan, Republic of the Philippines, Spain, Sweden, the United Kingdom and Yugoslavia.

International Horticultural Congress

The Fourteenth International Horticultural Congress will be held at Scheveningen, the Netherlands, 29 August to 6 September 1955. Ten Symposia will be organized to cover subjects of special interest. Among them, the following concern plant protection: Symposium I, on breeding for disease resistance; Symposium III, on mist spraying and disease control; and Symposium VII, on the distribution of virus-free plant material. General discussion will be divided into sections, dealing respectively with vegetables and seed growing, fruit growing, floriculture and bulb-growing, arboriculture, and tropical and subtropical culture. Under each section, papers on diseases and pests will be presented. The second symposium on virus diseases of fruit trees in Europe will also meet during the Congress.

Inquiries concerning this Congress should be addressed to the Hon. Secretary, Dr. G. de Bakker, 30, Bezuidenhout, The Hague, Netherlands.

Pesticide Tolerance Schedule in the United States

Specific tolerances for pesticide residues in or on fresh fruit and vegetables, established under authority of the U.S. Federal Food, Drug and Cosmetic Act, were published in the *Federal Register* on 11 March 1955. The schedule adopted varies somewhat with the tentative schedule

issued by the U.S. Department of Health, Education and Welfare on 20 October 1954 (see *FAO Plant Prot. Bull.* 3 : 32. 1954).

The schedule provides that no residues of the following pesticides are allowed to remain on fruits or vegetables prepared for market:

- Calcium cyanide
- Dinitro-O-sec. butylphenol
- Dinitro-O-cresol
- Hexaethyl tetraphosphate (HETP)
- Tetraethyl pyrophosphate (TEPP)
- Hydrocyanic acid
- Mercury-containing compounds
- Selenium and selenium-containing compounds

For other commonly-used pesticides the tolerance in p. p. m. on or in specific fruits and vegetables is as follows:

Aldrin	0.1
Benzene hexachloride	5.0
Calcium arsenate	3.5 of combined As_2O_3
Chlordane	0.3
Copper arsenate	3.5 of combined As_2O_3
DDT	7.0
2,4 – Dichlorophenoxy acetic acid	5.0
Dicyclohexylamine salt of dinitro-o-cyclohexylphenol	1.0
Dieldrin	0.1
Dinitro-o-cyclohexylphenol	1.0
EPN	3.0
Ferbam	7.0
Fluorine compounds	7.0 of combined fluorine
Heptachlor	0.1
2-Heptadecyl glyoxalidine	5.0
Lead arsenate	7.0 of combined lead
Lead arsenate (on citrus fruits)	1.0 of combined lead
Lindane	10.0
Magnesium arsenate	3.5 of combined As_2O_3
Methoxychlor	14.0
Naphthalene acetic acid	1.0
Nicotine-containing compounds	2.0
Parathion	1.0
Phenothiazine	7.0
SES (Sodium 2,4 – dichlorophenoxyethyl sulphate) (on asparagus and strawberry)	2.0
SES (on peanuts and potatoes)	6.0
Sodium arsenate	3.5 of combined As_2O_3
Tartar emetic	3.5
TDE	7.0
Toxaphene	7.0
Zineb	7.0
Ziram	7.0

Exemptions from the requirement of a tolerance will be granted in the following cases:

(1) When the total quantity of the pesticide in or on all raw agricultural commodities under conditions of use involves no hazard to the public health.

(2) When the following pesticides are applied to growing crops (not crops at the time of or after harvest):

- Copper compounds – Bordeaux mixture, copper acetate, basic copper carbonate (malachite), copper-lime mixtures, copper oxychloride, copper silicate, copper sulfate basic, copper-zinc chromate, cuprous oxide
- N-Octylbicyclo-(2,2,1)-5-heptene-2, 3-dicarboximide)
- Petroleum oils
- Piperonyl butoxide
- Piperonyl cyclonene
- N-Propyl isome
- Pyrethrum and pyrethrins
- Rotenone or derris or cube roots
- Ryania
- Sabadilla

First Supplemental List of National Plant Quarantine Services

Since the publication of the list of national plant quarantine services earlier in this Bulletin (2 : 126-128. 1954), information from additional countries or concerning recent changes has been received. It is hoped that, with the cooperation of governments, it will be possible to keep this list up-to-date, and to cover more countries by the publication of supplements.

AFGHANISTAN

Plant Protection Service
Royal Ministry of Agriculture, Kabul
(Mohammed Karim Kahan Siaie, Director-General)

ARGENTINA

Dirección General de Sanidad Vegetal
Ministerio de Agricultura
Paseo Colon 922, Buenos Aires
(Ing. Agr. Angel C. Stura, Director-General)

COSTA RICA

Departamento de Defensa Agropecuaria
Ministerio de Agricultura e Industrias
San José (Ing. Rodrigo Castro E., Jefe)

EGYPT

Department of Plant Protection
Ministry of Agriculture, Cairo
(Dr. Mahmoud Hosni, Director)

ENGLAND AND WALES

Plant Health Branch
Ministry of Agriculture and Fisheries
Whitehall Place, London
(P. G. Inch, Chief)

FINLAND

Department of Plant Pathology
Agricultural Research Center
(Maatalouskoelaitos, Kasvitautiosasto)
Tikkurila
(Prof. E.A. Jamalainen, Chief)

Department of Pest Investigation
Agricultural Research Center
(Maatalouskoelaitos, Tuhoeläinosasto)
Tikkurila
(Prof. Veikko Kanervo, Chief)

HONDURAS

Departamento de Defensa Vegetal
Dirección General de Agricultura
Tegucigalpa, D.C.
(Abraham Gúnera R., Jefe)

INDONESIA

Institute for Plant Diseases and Pests
(Penjelidikan Hama Tubu-tubuhan)
Bogor, Java
(Soepartpno Siswopranoto, Acting Head)

IRAN

Section de Quarantine
Ministère de l'Agriculture, Téhéran
(Mohammad Kaussari, Chef)

ISRAEL

Division of Plant Protection
Ministry of Agriculture
P.O. Box 8393, Jaffa
(G. Cohen, Head)

MEXICO

Dirección-General de Defensa Agrîcola
Secretaria de Agricultura y Ganaderia
Tacuba No. 7, Mexico, D.F.
(Ing. Esteban Uranga Prado, Director-General)

SOUTHERN RHODESIA

Branch of Entomology
Department of Research and Specialist Services
Causeway
(M.C. Mossop, Chief Entomologist)

SWEDEN

Statens Växtskyddsanstalt
Stockholm, 19
(Dr. I. Granhall, Head)

SYRIA

Plant Protection Service
Ministry of Agriculture, Damascus
(Abd el Gabbar Abu el Shamat, Director, Omar Hazakir, Chief of Plant Quarantine Division)

TERRITORY OF PAPUA AND NEW GUINEA (AUSTRALIA)

Department of Agriculture, Stock and Fisheries, Port Moresby
(A.E.P. Dwyer, Director)

TURKEY

Ziraat Mücadele Subesi Müdürü
Ziraat Vekâleti, Ankara
(Semsettin Günay, Director)

UNION OF SOUTH AFRICA

Division of Plant Control and Quarantine
Department of Agriculture, Stellenbosch
(Prof. S.J. du Plessis, Chief)

YUGOSLAVIA

Direction fédérale du Service pour la Protection des Végétaux
Savska 35, IV, Beograd
(Srboljub Todorovič, Chef)

Roma - Tip. del Senato del dott. Giovanni Bardi

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